

c) a nucleotide sequence having at least 80% sequence identity to the sequence set forth in SEQ ID NO:1, wherein said nucleotide sequence encodes a polypeptide having invertase inhibitor activity;

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d) a nucleotide sequence that hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 or a complement thereof under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C, or a complement thereof; and

e) a fragment of at least 50 contiguous nucleotides of the nucleotide sequence set forth in SEQ ID NO:1.

3. (amended) The nucleic acid molecule of claim 2, wherein said sequence encodes the amino acid sequence set forth in SEQ ID NO: 2.

4. (amended) A chimeric gene comprising a plant-functional promoter operably linked to the nucleotide sequence of claim 2.

5. (amended) The chimeric gene of claim 4, wherein the nucleotide sequence encodes the amino acid sequence set forth in SEQ ID NO:2.

6. (amended) The chimeric gene of claim 4, wherein said nucleotide sequence is the sequence set forth in SEQ ID NO:1.

7. (amended) The chimeric gene of claim 4, wherein said nucleotide sequence is the antisense sequence of the sequence set forth in SEQ ID NO:1, wherein said antisense sequence hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C.

11. (amended) A transformed plant having incorporated into its genome a DNA molecule, said molecule comprising a nucleotide sequence operably linked to a promoter capable of driving expression of a gene in a plant cell, wherein said nucleotide sequence is selected from the group consisting of:

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- a) a sequence encoding an invertase inhibitor having the amino acid sequence set forth in SEQ ID NO:2;
  - b) the nucleotide sequence set forth in SEQ ID NO:1;
  - c) a nucleotide sequence that is an antisense sequence for the nucleotide sequence set forth in SEQ ID NO:1, wherein said antisense sequence hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C;
  - d) a nucleotide sequence having at least 80% sequence identity to the sequence set forth in SEQ ID NO:1, wherein said nucleotide sequence encodes a polypeptide having invertase inhibitor activity;
  - e) a nucleotide sequence that hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 or a complement thereof under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C, or a complement thereof; and
  - f) a fragment of at least 50 contiguous nucleotides of the nucleotide sequence set forth in SEQ ID NO:1.

12. (amended) The transformed plant of claim 11, wherein the nucleotide sequence encodes the amino acid sequence set forth in SEQ ID NO:2.

13. (amended) The transformed plant of claim 11, wherein the nucleotide sequence is the nucleotide sequence set forth in SEQ ID NO:1.

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20. (amended) A method for modulating invertase activity in a plant, said method comprising transforming said plant with a DNA construct, said construct comprising a promoter that drives expression in a plant cell operably linked with a nucleotide sequence selected from the group consisting of:

- a) a sequence encoding an invertase inhibitor having the amino acid sequence set forth in SEQ ID NO:2;
- b) the nucleotide sequence set forth in SEQ ID NO:1;
- c) a nucleotide sequence that is an antisense sequence for the nucleotide sequence set forth in SEQ ID NO:1, wherein said antisense sequence hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C;
- d) a nucleotide sequence having at least 80% sequence identity to the sequence set forth in SEQ ID NO:1, wherein said nucleotide sequence encodes a polypeptide having invertase inhibitor activity;
- e) a nucleotide sequence that hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 or a complement thereof under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C, or a complement thereof; and
- f) a fragment of at least 50 contiguous nucleotides of the nucleotide sequence set forth in SEQ ID NO:1.

21. (amended) A method for increasing seed yield in a plant, said method comprising transforming said plant with a DNA construct, said construct comprising a promoter that drives expression in a plant cell operably linked with a nucleotide sequence selected from the group consisting of:

- a) a sequence encoding an invertase inhibitor having the amino acid sequence set forth in SEQ ID NO:2;
- b) the nucleotide sequence set forth in SEQ ID NO:1;

c) a nucleotide sequence that is an antisense sequence for the nucleotide sequence set forth in SEQ ID NO:1, wherein said antisense sequence hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C;

d) a nucleotide sequence having at least 80% sequence identity to the sequence set forth in SEQ ID NO:1, wherein said nucleotide sequence encodes a polypeptide having invertase inhibitor activity;

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e) a nucleotide sequence that hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 or a complement thereof under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C, or a complement thereof; and

f) a fragment of at least 50 contiguous nucleotides of the nucleotide sequence set forth in SEQ ID NO:1.

22. (amended) A transformed plant cell having incorporated into its genome a DNA molecule, said molecule comprising a promoter capable of driving expression of a gene in a plant cell operably linked to a nucleotide sequence selected from the group consisting of:

a) a sequence encoding an invertase inhibitor having the amino acid sequence set forth in SEQ ID NO: 2;

b) the nucleotide sequence set forth in SEQ ID NO:1;

c) a nucleotide sequence that is an antisense sequence for the nucleotide sequence set forth in SEQ ID NO:1, wherein said antisense sequence hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C;

d) a nucleotide sequence having at least 80% sequence identity to the sequence set forth in SEQ ID NO:1, wherein said nucleotide sequence encodes a polypeptide having invertase inhibitor activity;

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e) a nucleotide sequence that hybridizes to the nucleotide sequence set forth in SEQ ID NO:1 or a complement thereof under high stringency hybridization conditions of 50% formamide, 1 M NaCl, 1% SDS at 37°C, and a wash in 0.1X SSC at 60 to 65°C, or a complement thereof; and

f) a fragment of at least 50 contiguous nucleotides of the nucleotide sequence set forth in SEQ ID NO:1.

[ Please add the following new claims 23-26: ]

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--23. A transformed monocotyledonous plant having incorporated into its genome a DNA molecule, said molecule comprising a nucleotide sequence operably linked to a promoter capable of driving expression of a gene in a monocotyledonous plant cell, wherein said nucleotide sequence encodes a yeast invertase enzyme.

24. A method for modulating invertase activity in a monocotyledonous plant, said method comprising transforming said monocotyledonous plant with a DNA construct, said construct comprising a nucleotide sequence operably linked to a promoter that drives expression in a monocotyledonous plant cell, wherein said nucleotide sequence encodes a yeast invertase enzyme.

25. A method for increasing seed yield in a monocotyledonous plant, said method comprising transforming said monocotyledonous plant with a DNA construct, said construct comprising a promoter that drives expression in a monocotyledonous plant cell operably linked with a nucleotide sequence encoding a yeast invertase enzyme.

26. A transformed monocotyledonous plant cell having incorporated into its genome a DNA molecule, said molecule comprising a promoter capable of driving expression of a gene in a monocotyledonous plant cell operably linked to a nucleotide sequence encoding a yeast invertase enzyme.--